

***Marietta pulchella* (Howard)  
(Hymenoptera: Aphelinidae), a Primary  
Parasite of *Conchaspis angraeci*  
Cockerell (Homoptera: Conchaspidae)<sup>1</sup>**

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ABSTRACT

An aphelinid wasp, *Marietta pulchella* (Howard), was discovered for the first time in Hawaii when it was reared from the angraecum scale, *Conchaspis angraeci* Cockerell. *M. pulchella* develops as a solitary ectoparasite within the scale cover. This is the first record of a parasitoid attacking *C. angraeci*, and the first record of a *Marietta* species developing as a primary parasite.

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The angraecum scale, *Conchaspis angraeci* Cockerell (Fig. 1), is the best known and most widely distributed species of the small scale insect family Conchaspidae. It was found established for the first time in Hawaii in November 1980 in Honolulu (Beardsley 1983). Before then it was known from Florida, the West Indies, Central and South America. The scale has a wide host range, having been recorded in Florida from about thirty species of woody plants and orchids (Hamon 1979). In Hawaii it has been found infesting several ornamental shrubs including *Acalypha* spp., *Codiaeum variegatum* (L.) Blume, *Hibiscus rosa-sinensis* L., *Nothopanax* sp., and *Pittosporum tobira* (Thunb.) Ait. Severe infestations on ornamental *Pittosporum* frequently have resulted in dieback and death of affected plants.

Ogasawara (1986) studied population trends of angraecum scale and an associated predaceous mite, *Cheletogenes ornatus* (Canestrini and Fan-zago). She found no evidence of parasitoids attacking the scale, nor did other workers, including the authors, who examined numerous infestations of *C. angraeci* during the years 1980-88.

There appear to be no published records of parasitoids attacking *C. angraeci*. However, in 1986, Dr. Avas Hamon of the Florida Department of Agriculture and Consumer Services reared three species of parasitoids from *C. angraeci* specimens collected in Florida. These were determined (by JWB) as *Ablerus* sp., possibly *clisiocampae* (Ashmead) (Aphelinidae), *Marietta* sp. (Aphelinidae) and *Zoamma* sp., possibly *microphagus* (Mayr) (Encyrtidae) (Beardsley unpublished). Since the three genera cited were all presumed to be hyperparasitic, no attempt was made to introduce any of these species into Hawaii. Beardsley (unpublished) suggested that either a true primary parasite had been overlooked, or that one or more of the presumed hyper-

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FIGURE 1. *Conchaspis angraeci* on twig of *Pittosporum tobira*.

parasites were developing as primary parasites. Apparently, no additional work on parasites of this scale has been done in Florida.

In June 1989, a collection of angraecum scale on *Nothopanax* sp. stems from Kailua, Oahu was submitted to one of us (DMT) for identification, and parasite emergence holes in some scale covers were noted for the first time in Hawaii. Several specimens of a *Marietta* sp. were recovered from this material. These were determined by Beardsley, using the worldwide key to species by Hayat (1986), as *M. pulchella* (Howard), a species previously unreported from the Hawaiian Islands. Additional collections from *Pittosporum* and *Hibiscus* bark from several localities in the Honolulu area yielded several dozen additional *M. pulchella* adults from parasitized *C. angraeci*, some of which were individually isolated in gelatin capsules. Dissections of mature scales without emergence holes yielded about one dozen black parasite pupae. These were isolated and produced adults of *M. pulchella*. Several *C. angraeci* were found with a single parasitoid larva feeding externally beneath the host scale cover, in a manner similar to that of *Aphytis* spp. on armored scale insects. In no case was more than one parasitoid larva or pupa found associated with an individual scale, and no parasitoid species other than *M. pulchella* was ever recovered from these scales. Therefore, we concluded that in Hawaii *M. pulchella* develops as a primary parasite of *C. angraeci*.

Hayat (1986) recorded the distribution of *M. pulchella* as Mexico and North America. Recorded hosts include a number of armored scale species

(Diaspididae), *Lecanodiaspis* sp. (Lecanodiaspididae) and *Parasaissetia nigra* (Nietner) (Coccidae). Hayat stated that, so far as is known, all species of *Marietta* are hyperparasites.

The *Marietta* species reared from *C. angraeci* by Hamon in Florida is not *M. pulchella*. It will not run in Hayat's (1986) key and may be undescribed. Possibly it also is a primary parasite of *C. angraeci*. Further work is needed to determine this.

Examination of *Pittosporum tobira* plants at two locations in Honolulu (University of Hawaii Manoa Campus and Hawaii Kai) during February 1990, revealed that recent twig growth (ca two to four months old) was largely free of *C. angraeci*, and that the relatively few infested twigs which were found had many scales with parasite emergence holes. Older twigs and branches on these plants sometimes appeared to be heavily infested, but nearly all of these scales which we examined were dead, and were presumed to be the remains of former heavy infestations. Plants which formerly suffered severe scale damage (stunting, twig and branch dieback) appeared to be in good health, with much recent new growth. There appeared to have been a major reduction in the numbers of viable scales on these plants, compared to the period before *M. pulchella* was discovered. We concluded, therefore, that *M. pulchella* had brought about a significant degree of biological control of angraecum scale in the Honolulu area.

#### REFERENCES CITED

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